

Appl. No. 10/646,218
Amdt. dated January 18, 2005
Reply to Office action of November 3, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended). A method of producing an integrated circuit configuration, which comprises:

forming a diffusion barrier layer on a substrate having at least a first insulating layer with a first conductive structure embedded therein, the diffusion barrier layer covering the first conductive structure completely;

forming a second insulating layer on the diffusion barrier layer;

etching a contact hole into the second insulating layer above the first conductive structure without uncovering the first conductive structure, and with a surface of the first conductive structure being covered with the diffusion barrier layer within the hole;

forming spacers on side walls of the contact hole, the spacers acting as a barrier to diffusion of a material from the first conductive structure into the second insulating layer;

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subsequently opening the contact hole as far as a surface of the first conductive structure; and

forming in the contact hole a second conductive structure conductively connected to the first conductive structure.

Claim 2 (original). The method according to claim 1, which comprises forming the spacers of electrically conductive material.

Claim 3 (original). The method according to claim 1, which comprises

forming the first electrically conductive structure by applying the first insulating layer to the substrate;

producing an opening with a bottom and side walls in the first insulating layer;

depositing and structuring a first conductive barrier layer for forming an electrically conductive first diffusion barrier structure covering the bottom and the side walls of the opening; and

forming the first conductive structure by filling the opening with conductive material.

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Claim 4 (original). The method according to claim 3, which comprises

depositing a second conductive barrier layer after the contact hole has been opened as far as the surface of the first conductive structure;

depositing a conductive layer;

structuring the conductive layer and the second conductive barrier layer, and thereby forming the second conductive structure and a second diffusion barrier structure arranged underneath the second conductive structure.

Claim 5 (currently amended). The method according to claim 3, which comprises:

forming one of the first conductive structure and the second conductive structure with a material selected from the group consisting of copper, silver, gold, platinum, and palladium;

forming one of the spacers, the first diffusion barrier structure, and the a second diffusion barrier structure with a material selected from the group consisting of Ta, TaN, Ti, and TiN Ta or Ti; and

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forming one of the diffusion barrier layer and the spacers with a material selected from the group consisting of SiN and SiON.

Claim 6 (new). A method of producing an integrated circuit configuration, which comprises:

forming a diffusion barrier layer on a substrate having at least a first insulating layer with a first conductive structure embedded therein, the diffusion barrier layer covering the first conductive structure completely;

forming a second insulating layer on the diffusion barrier layer;

etching a contact hole into the second insulating layer above the first conductive structure without uncovering the first conductive structure, and with a surface of the first conductive structure being covered with the diffusion barrier layer within the hole;

forming spacers on side walls of the contact hole, the spacers acting as a barrier to diffusion of a material from the first conductive structure into the second insulating layer;

opening the contact hole as far as a surface of the first conductive structure; and

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forming in the contact hole a second conductive structure conductively connected to the first conductive structure and a second diffusion barrier structure arranged underneath the second conductive structure.